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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/071,379	02/06/2002	Sudhakar Bobba	03226.158001;P6867	1774

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OSHA & MAY L.L.P./SUN
1221 MCKINNEY, SUITE 2800
HOUSTON, TX 77010

EXAMINER	
DIMYAN, MAGID Y	

ART UNIT	PAPER NUMBER
2825	

DATE MAILED: 09/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/071,379	BOBBA ET AL.	
	Examiner	Art Unit	
	Magid Y Dimyan	2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 January 2004 and 06 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *Jul 1,2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Acknowledgement

1. This office action is responsive to the Amendment to the Claims, and to the Remarks, both filed 12 July 2004. It is acknowledged that the Applicants have amended claims 1, 3, 7 and 11 – 14, and cancelled claim 2 without prejudice or disclaimer. Claims 1 and 3 – 15 remain pending in this application.

2. The Amendments to the claims were acceptable to the Examiner in order to overcome the claim objections and 35 USC § 112 claim rejections cited in the previous office action. However, the applicants' arguments and the amended claims were not persuasive to overcome the 35 USC § 103 rejections in the office action, as recited below.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 and 3 – 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,596,506 to Petschauer et al (hereinafter, "Petschauer") in view of U.S. Patent No. 6,285,208 to Ohkubo.

5. Referring to claim 1, Petschauer discloses an integrated circuit that includes (a) a signal driver that generates a signal on a signal path (Fig. 1; column 6, lines 10 – 29); (b) a wire disposed adjacent to the signal path (column 6, lines 47 – 58); and (c) circuitry that generates a value on the first wire (a "0" to "1" transition) that causes a discharge of capacitance between the signal path and the first wire (column 8, lines 10 – 18). Petschauer's invention pertains to crosstalk and noise minimization and prevention techniques in complex IC designs (column 1, lines 34 – 65), and this is basically the main reason why shielding is performed in circuit designs. However, Petschauer does not teach the use of shield control circuitry. Ohkubo on the other hand, teaches a semiconductor IC that includes signal lines, a plurality of shield wiring lines, as well as shield control circuitry (see Figs. 5; 10 and 11), and discloses how effective shielding in IC circuits can be accomplished using his shielding methodology. Thus, Petchauer and Ohkubo disclose all the elements of claim 1. As per claim 3, see Petschauer - Figs. 3A and 3B which show the capacitor, as claimed. As per claims 4 and 5, see Petschauer - Figs. 1, 10A and 10B, which show the driver as a gate and as transistors, as claimed. Petschauer does not teach the limitations of claims 6 – 12 and15, however Ohkubo discloses all the claimed elements. Referring to claim 6, see Ohkubo, Fig. 11, which shows the

shield control circuitry (W12, W22, etc) dependent on the signal driver as claimed. As for claim 7, see Ohkubo, Fig. 5, which shows the two wires (S1 and S2) are used to shield the signal wire (F2) as claimed. Regarding claims 8 and 9, see Ohkubo - Fig. 10; column 8, line 60 to column 9, line 5, which shows the use of synchronous and asynchronous signals as claimed. As for claims 10 and 11, see Ohkubo – Fig. 10 (blocks W11, W21, etc) that shows a shield control circuitry that includes a delay element (in this case, a NOR gate which can be used as a delay element) as well as an inverter, as claimed. The inclusion of that gate guarantees that the delay will be greater than the signal propagation delay of the signal, as claimed in claim 11. As per claim 12, see Ohkubo - Figs. 5, 6F, 6G and 6H, which show how the wires shielding the signal path are controlled to only participate in discharge events ("0" to "1" transitions) as claimed. Referring to claim 13, see Petschauer column 11, lines 3 – 36, which teach how the charging and discharging of the capacitor takes place when the signal transitions from "0" to "1", and "1" to "0" as claimed. Claim 14 has the same limitations as claim 3, and so the same rejections apply. As per claim 15, see Ohkubo, Fig. 10, which shows how to selectively delay the driving of the wire to a second potential by controlling the inputs IN1, IN2, IN3, etc, as claimed. Since the use of shielding and shielding control has become an essential feature in complex high speed IC designs in order to eliminate or minimize crosstalk and noise problems created by cross-coupling capacitances, it would therefore be obvious to one having ordinary skill in the art at the time of the invention to combine the teachings of Petschauer and Ohbuto to achieve the same inventions as claimed.

Response to Arguments

6. Applicant's arguments filed 12 July 2004 have been fully considered but they are not persuasive to overcome the 35 USC § 103 rejections. The Examiner wants to thank the Applicants for pointing out and describing the significance of "low" to "high" and "high" to "low" transitions on signal wires, and their effect on the charging and the discharging of capacitors between the wires. In fact, it is well known in the art that these effects are the main cause of crosstalk (i.e., noise) generated in complex circuit designs. Thus, signal shielding techniques to overcome this potentially serious problem are often required. The prior art cited by the Examiner in the previous office action teach the claimed inventions. Petschauer cites a method for estimating and reducing the crosstalk in a circuit design (see Abstract; col. 2, line 60 to col. 4, line 7), and Petschauer teaches the significance of charging and discharging of signal lines on crosstalk (see col. 11, lines 3 – 36). Ohkubo, on the other hand, discloses a method for effectively shielding a signal line based on "0" to "1" and "1" to "0" transitions using a shield control circuit as claimed (see cols. 7 and 8; Fig. 5). The Applicants argue in their Remarks that Ohkubo is "directed to a technique for ensuring that a capacitance accompanies a signal for connecting circuit blocks in an IC". The Examiner respectfully disagrees. See the Ohkubo Abstract, which cites how shielding wires are used in this invention to prevent interference (i.e., crosstalk). Thus, the Applicants' arguments are rendered moot.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Magid Y Dimyan whose telephone number is (571) 272-1889. The examiner can normally be reached on Monday - Friday 8:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Magid Y Dimyan
Examiner
Art Unit 2825

myd
1 September 2004

ANNETTE M. THOMPSON
PRIMARY EXAMINER